

## عنوان مقاله:

Evaluation of Fatigue Life Reduction Factors at Bolt Hole in Double Lap Bolted Joints Using Volumetric Method

## محل انتشار:

فصلنامه مکانیک جامد، دوره 9، شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 11

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## خلاصه مقاله:

In this research, the influence of bolt preload on the fatigue strength of 2024-T3 aluminium alloy double lap bolted joints has been studied experimentally and numerically. To do so, three sets of the specimens were prepared and each of them subjected to tightening torque of 1, 2.5 and 5 N-m and then fatigue tests were conducted under various cyclic axial load levels. In the numerical method, the influence of bolt preload on the fatigue life of double lap bolted joints were studied using the values of fatigue notch factor obtained by volumetric approach. In order to obtain stress distribution around the notch (hole) which is required for volumetric approach, nonlinear finite element simulations were carried out. To estimate the fatigue life, the S-N curve of plain (un-notched) specimen and the fatigue notch factors obtained from volumetric method were used. The estimated fatigue life was compared with those obtained from the experiments. The investigation reveals that there is a good agreement between the life predicted by the volumetric approach and the experimental results for various specimens with different amounts of bolt preload. The volumetric approach and experimental results showed that the fatigue strength of specimens were improved by increasing the bolt preload as the result of compressive stresses which appeared around the bolt hole.

## کلمات کلیدی:

Clamping force, Bolted joint, Hybrid joint, Tightening torque

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